

Applic. No.: 10/075,539

Amdt. Dated May 16, 2005

Reply to Office action of February 18, 2005

Amendment to the drawings:

The attached sheet 3/3 of drawings includes changes to Fig. 3. This sheet 3/3, which includes Fig. 3, replaces the original sheet 3/3. In Fig. 3, the signal labeled CAS that triggers the data item 74' of data signal DATA2 should be labeled CAS1 in accordance with page 17, line 19 of the specification.

Attachment: Replacement Sheet
Annotated Sheet Showing Changes

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REMARKS/ARGUMENTS

Reconsideration of the application is requested.

Claims 1, 3, and 6-11 remain in the application. Claims 1, 3, 6-7, and 11 have been amended. Claims 2 and 4-5 have been cancelled.

In item 2 on page 2 of the above-identified Office action, claim 2 has been objected to because of an informality. Appropriate correction has been made.

In item 3 on page 2 of the above-identified Office action, claims 5 and 11 have been rejected as being indefinite under 35 U.S.C. § 112, second paragraph.

More specifically, the Examiner has stated that the limitation "said command decoder" recited in claim 5 has insufficient antecedent basis. Appropriate correction has been made.

It is accordingly believed that the claims meet the requirements of 35 U.S.C. § 112, second paragraph. Should the Examiner find any further objectionable items, counsel would appreciate a telephone call during which the matter may be resolved. The above-noted changes to the claims are provided

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solely for cosmetic and/or clarificatory reasons. The changes are neither provided for overcoming the prior art nor do they narrow the scope of the claims for any reason related to the statutory requirements for a patent.

In item 4 on pages 2-4 of the above-mentioned Office action, claims 1 and 9-10 have been rejected as being unpatentable over Wu et al. (US 6,507,888 B2) in view of Kim et al. (US 6,134,180) under 35 U.S.C. § 103(a).

In item 5 on pages 4-6 of the above-mentioned Office action, claims 2-4 and 6-8 have been rejected as being unpatentable over Wu et al. and Kim et al. and further in view of Karabatsos (US 6,446,158 B1) under 35 U.S.C. § 103(a).

The rejections have been noted and claim 1 has been amended in an effort to even more clearly define the invention of the instant application. Support for the changes is found in original claims 2 and 4-5.

Before discussing the prior art in detail, it is believed that a brief review of the invention as claimed, would be helpful.

Claim 1 calls for, inter alia:

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the external clock signal being fed to said interface device, and said conversion device generating complementary clock signals, of which one of the complementary clock signals being fed to said first semiconductor memory module and another of the complementary clock signals being fed to said second semiconductor memory module;

said conversion device having a command decoder for detecting a command for receiving data, the command for receiving data containing at least two signal pulses present on the rising edge of the external clock signal, and the command for receiving data being forwarded to said first semiconductor memory module in a manner delayed by $3 \frac{1}{2}$ clock periods of the external clock signal and being forwarded to said second semiconductor memory module in a manner delayed by three clock periods of the external clock signal;

said command decoder detecting a command for outputting data, the command for outputting data containing two signal pulses present on the rising edge of the external clock signal, and the command for outputting data being forwarded to said first semiconductor memory module in a manner delayed at most by one clock cycle of the external clock signal and being forwarded to said second semiconductor memory module in a manner delayed at most by $1 \frac{1}{2}$ clock periods of the external clock signal.

The function of the conversion device according to the invention of the instant application includes delaying the RAS- and CAS-signals as shown in Figs. 2 and 3. It is to be noted that for a read access to the semiconductor devices 2 and 3, the RAS- and CAS-signals can be delayed by one additional clock cycle in order to comply with setup and hold times (see page 15, lines 18-20 of the specification).

Amended claim 1 of the instant application is directed to a practical embodiment of the conversion device in order to be

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able to use double SDRAM devices to perform DDR SDRAM functionality.

Wu et al. show a conversion device 220 (see Fig. 2) which can be connected to two separate SDR modules 230, 240. However, Wu et al. do not describe whether or not the SDR modules 230, 240 are operated at shifted clock cycles. Further, the conversion device 220 may include an instruction controller 122 (Fig. 1). However, the internal construction of the instruction controller 122 is not described in Wu et al. In contrast, the invention of the instant application provides the configuration to perform certain time shifts of the RAS- and CAS-signals.

Kim et al. include a command decoder 304 (see Fig. 3), which shows pulses occurring at the rising edges of the clock signal K (pulses B1, B2, B3 in Fig. 5). However, Kim et al. fails to disclose a command decoder that shifts the control signal by a predetermined amount and forwards the shifted control signals to first and second memory devices operated at complementary clock signals, as recited in amended claim 1 of the instant application.

Karabatsos describes a switch (see 110, 111 in Fig. 3A), which simply switches over between two memory chips 100, 102.

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Karabatsos does not describe any further control signals like RAS- and CAS-signals, which need to be shifted by certain predetermined number of clock cycles in order to effectively control the first and second memory devices.

It is accordingly believed to be clear that none of the references, whether taken alone or in any combination, either show or suggest the features of claim 1. Claim 1 is, therefore, believed to be patentable over the art and since all of the dependent claims are ultimately dependent on claim 1, they are believed to be patentable as well.

In view of the foregoing, reconsideration and allowance of claims 1, 3, and 6-11 are solicited.

In the event the Examiner should still find any of the claims to be unpatentable, counsel would appreciate a telephone call so that, if possible, patentable language can be worked out.

If an extension of time for this paper is required, petition for extension is herewith made. Please charge any fees which might be due with respect to 37 CFR Sections 1.16 and 1.17 to

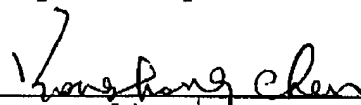
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the Deposit Account of Lerner and Greenberg, P.A., No. 12-
1099.

Respectfully submitted,


For Applicant

Yonghong Chen
Reg. No. 56,150

YC

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Lerner and Greenberg, P.A.
Post Office Box 2480
Hollywood, FL 33022-2480
Tel: (954) 925-1100
Fax: (954) 925-1101